

NON-PUBLIC?: N
ACCESSION #: 9107290191
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Indian Point Unit No. 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000247

TITLE: Diesel Generator Breaker Trip
EVENT DATE: 06/22/91 LER #: 91-010-00 REPORT DATE: 07/22/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: James J. Maylath, Senior Engineer TELEPHONE: (914) 526-5356

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: EK COMPONENT: BKR MANUFACTURER: W120
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On June 22, 1991, during testing of emergency diesel generator (EDG) No. 21 with the reactor at cold shutdown for refueling, the diesel output breaker to 480V bus 5A tripped. Loss of power on 480V bus 5A resulted since the normal offsite power breaker was open as part of the test configuration. The loss of power to 480V bus 5A initiated the "blackout" logic which started the other two EDGs and stripped the 480V buses of offsite power. These two EDGs automatically loaded to 480V buses 3A and 6A. Bus 2A was not automatically loaded because its diesel supply breaker had been racked out as part of the test configuration. One service water pump auto-started, and the residual heat removal, component cooling water, charging and additional service water pumps were started manually within one minute. The tie breaker between 480V buses 2A and 3A was then manually closed, thereby energizing bus 2A. Lighting and motor control centers (MCC's) were reset, and spent fuel pool cooling was re-established 36 minutes after the initial occurrence. Throughout the event offsite power was available, and there was no increase in either

reactor coolant system (RCS) or spent fuel pool temperature. Offsite power to the 480V buses was restored and the diesels were subsequently unloaded.

END OF ABSTRACT

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Emergency Diesel Generator Breaker Trip

EVENT DATE:

June 22, 1991

REPORT DUE DATE:

July 22, 1991

REFERENCES:

Significant Occurrence Report (SOR) 91-276

PAST SIMILAR OCCURRENCE:

August 6, 1986; LER 86-029
October 15, 1986; LER 86-033

DESCRIPTION OF OCCURRENCE:

On June 22, 1991, at 1800 hours, during testing of Emergency Diesel Generator (EDG) No. 21, its output breaker, EG1 which supplies 480V bus 5A, tripped open. Due to the test configuration at the time, the normal offsite supply through breaker 5A was open, and the tie to bus 2A through breaker 2AT5A was closed. The trip of breaker EG1 initiated a trip of breaker 2AT5A. This trip sequence is designed to prevent a fault on bus 5A from propagating to bus 2A in addition to protection of the diesel. This resulted in a loss of power to bus 5A which initiated starting of EDG No. 22 and 23. Due to other unrelated activities being done at the time of the event, the lockout unit trip relays were already in the tripped position. This initiated the "Blackout and Unit Trip with no

Safety Injection" logic which stripped the remaining 480V buses from their offsite power sources. EDG No. 22 automatically loaded onto bus 3A, however it did not load 2A because the test configuration had breaker EG2A racked out (this breaker connects bus 2A to EDG No. 22). This was done to prevent EDG No. 21 and 22 from being tied together during the test as the tie breaker between buses 2A and 5A was closed. EDG No. 23 automatically loaded onto bus 6A; the operators had concurrently performed manual actions to load buses 3A and 6A.

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DESCRIPTION OF OCCURRENCE: (continued)

Service Water Pump No. 22 automatically started, and Residual Heat Removal (RHR) Pump No. 22, Component Cooling Pump No. 23, Charging Pump No. 23 and Service Water Pump No. 23 and 26 were manually started within one minute after the initial occurrence. The tie breaker between bus 2A and 3A, (breaker 2AT3A) was closed energizing bus 2A. Lighting and motor control centers associated with buses 2A, 3A and 6A were subsequently manually reset. Spent fuel pool cooling was re-established 36 minutes after the initial occurrence. Breaker EG1 was racked out, and the tie breaker between bus 2A and 5A was closed energizing bus 5A. All 480V buses were now energized at 37 minutes after the initial occurrence.

Offsite power remained available throughout the entire event. Once the 480V buses were energized from EDG No. 22 and 23, the operators proceeded to restore offsite power to the buses. The bus tie breakers were opened, and EDG No. 22 and 23 were unloaded and returned to the "AUTO" mode at one hour after the initial occurrence.

ANALYSIS OF OCCURRENCE:

This report is being made because actuation of 480V undervoltage logic which is an Engineered Safety Feature (ESF) occurred. Any manual or automatic actuation of an ESF is reportable under 10 CFR 50.73(a)(2)(iv). There were no adverse safety implications as a result of this event. All ESF's performed as expected. Reactor coolant system temperature remained at 94 degrees F, and spent fuel pool temperature remained at 96 degrees F throughout the event. There was no personnel injury or damage to equipment.

CAUSE OF OCCURRENCE:

This event was initiated by the tripping of the EDG No. 21 output breaker EG1. The breaker tripped on overcurrent as determined by its amptector. At this time, EDG No. 21 was undergoing testing to establish a new rating

of 2300kw for one half hour. This required the diesel to supply 3300 amps at 0.85 power factor, which is 2300kw. The amptector setpoint had been determined to accommodate the new diesel rating. During the test there was an apparent change in the amptector setpoint. This was an abrupt change rather than a gradual drift. The amptector and its associated current transformers (CT's) were removed and tested by station personnel. A similar setpoint change was observed during bench testing. The failure was only observed once during testing and could not be repeated. The CT's were sent to the Technical Services laboratories, and no abnormalities have yet been found on the CT's. The amptector and CT's are to be sent to the Westinghouse, their manufacturer, for analysis.

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CAUSE OF OCCURRENCE: (continued)

The test configuration required the diesel to be paralleled to the system. Since the normal offsite supply breaker to 480V bus 5A (breaker 5A) is physically above the diesel output breaker, it could not be used to connect to the system because ANSI C37.20.1 limits the rating of the upper breaker in a switchgear configuration in which the upper and lower breakers are loaded, and the required 3300 amp diesel output could have exceeded this limitation unless significant load was added to bus 5A (this was considered, but sufficient load could not be ensured without adding temporary loads to the bus). The test therefore provided for the diesel to be paralleled to the system through breaker 2A which is the normal supply to 480V bus 2A. This required that breaker 5A be open, and the tie between buses 2A and 5A (breaker 2AT5A) be closed with breaker 2A closed. Breakers EG2A, EDG No. 22 diesel supply to bus 2A, and breaker 2AT3A were racked out to preclude any possibility of tying EDG No. 21 and 22 together.

When breaker EG1 tripped, a trip was initiated on breaker 2AT5A, as designed, to protect bus 2A from a fault on bus 5A. As a result, bus 5A was de-energized, and the "Blackout and Unit Trip with no Safety Injection" logic was initiated as described above.

CORRECTIVE ACTION:

The amptector and associated CT's were replaced, and breaker EG1 was tested and found to be operable prior to being returned to service. The amptector and CT's involved in the breaker trip are being sent to their manufacturer for further analysis.

The stripping of the 480V buses and loading of EDG No. 22 and 23 could have been avoided if the lockout unit trip relays had been reset. The

loss of bus 5A would then have only initiated a start of EDG No. 22 and 23. During cold shutdown and refueling the lockout relays are tripped or reset depending on the plant activities or other tests being performed at the particular time. The state of the lockout relays apparently was not considered in the performance of this test. Future tests will take into consideration the state of the lockout relays.

This test required coordination with System Operation since the offsite system voltage was to be reduced (it was reduced to 135kv) in order for the diesel to deliver 3300 amps at 0.85 power factor. The time frames allowed for this reduction were very limited. Therefore, while consideration of the state of the lockout relays will be made in future tests, their position may be governed by offsite system and plant requirements.

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Stephen B. Bram
Vice President

Consolidated Edison Company of New York, Inc.
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Broadway & Bleakley Avenue
Buchanan, NY 10511 July 22, 1991
Telephone (914) 737-8116 Re: Indian Point Unit No. 2
Docket No. 50-247
LER 91-10-00

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 91-10-00 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours

Attachment

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